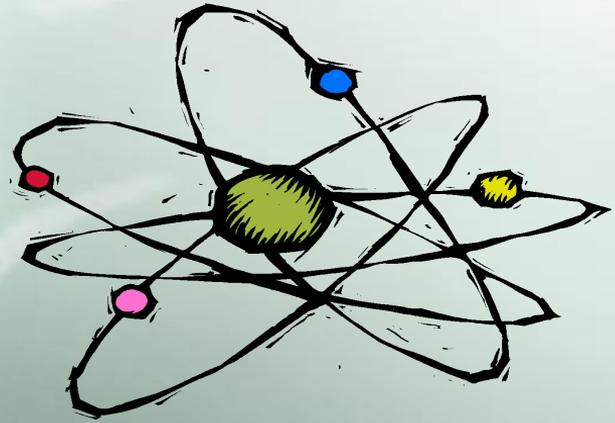


Atoms & Elements



Originally created by G. Baker:

www.thesciencequeen.net

Altered by L. G. New

Notes (more on this tomorrow!)

These are strategies that have been shown to **increase understanding and retention** of information in notes (basically by forcing you to think about and process it a bit)

Notes Should:

1. Have a **Title** at the top
2. Include **questions** e.g. imagine that you were making a test about the info—what would you ask?? (we will add these on sticky notes after first round of notetaking)
3. **Key vocabulary** words should be highlighted or underlined in color.
4. Everything should be **neat and legible.**

Learning Target

I can describe the
fundamental structure of
matter.





Discuss with Table Partner

Questions:

What is **matter**?

What are things that are **NOT** matter?

*Random students will be called on to answer, so please be ready to share with the class



An atom refresher

- **Matter** is anything that takes up space and has mass.
- Atoms are the basic building blocks of matter, sort of how bricks are the building blocks of houses. There are many types of atoms.



An atom refresher

- Matter-anything that takes up space & has mass.
- Atoms-basic building blocks of matter, sort of how bricks are the building blocks of houses. There are many types of atoms.

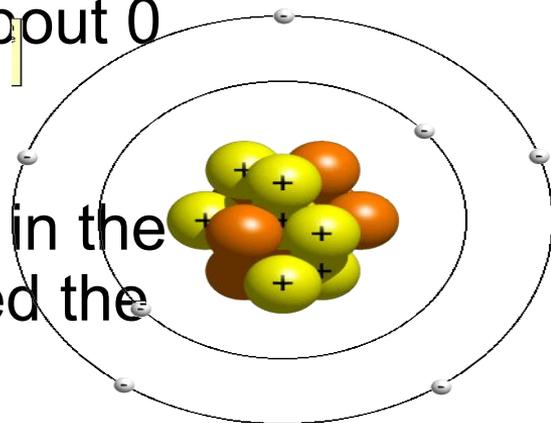
An atom refresher

3 parts of an atom:

- **Proton** = positive charge, mass of 1
- **Neutron** = no charge, mass of 1
- **Electron** = negative, mass of about 0

- The proton & neutron are found in the center of the atom, a place called the **nucleus**.

- The *electrons* orbit the nucleus.



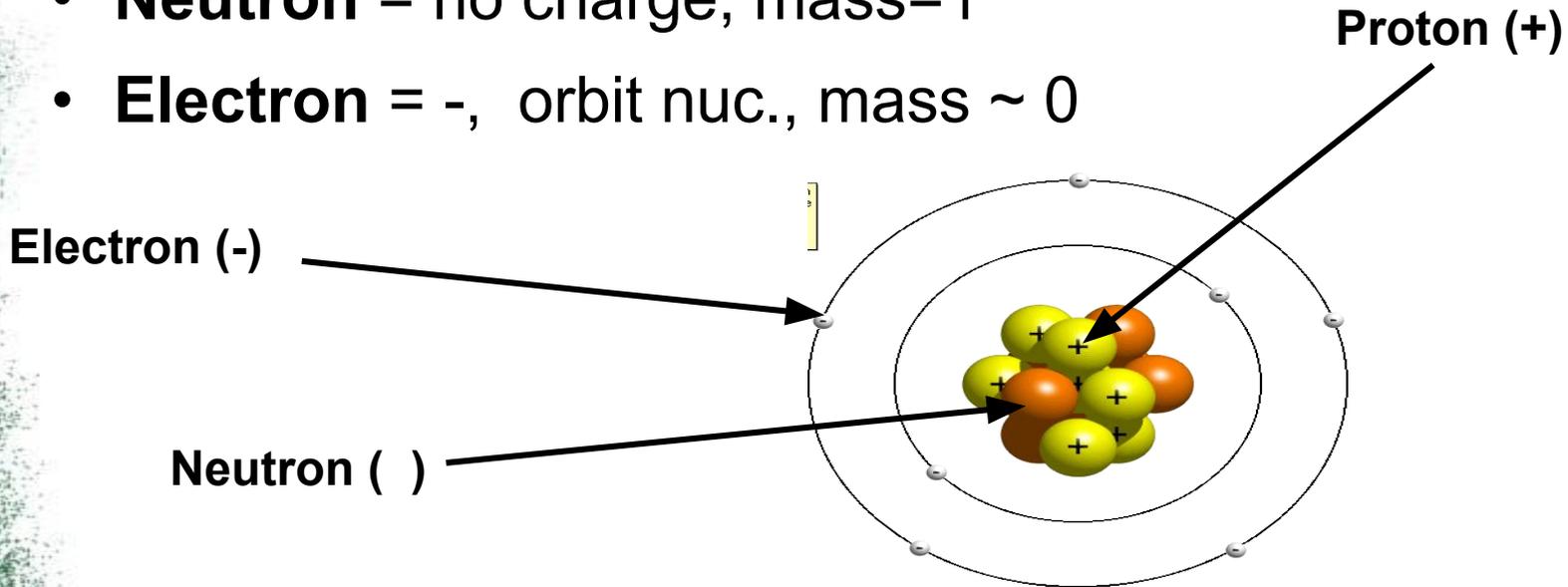
Picture from
http://education.jlab.org/qa/atom_model_03.gif

Sketch a basic atom in notes

3 parts of an atom:

- **Proton** = +, mass=1
- **Neutron** = no charge, mass=1
- **Electron** = -, orbit nuc., mass ~ 0

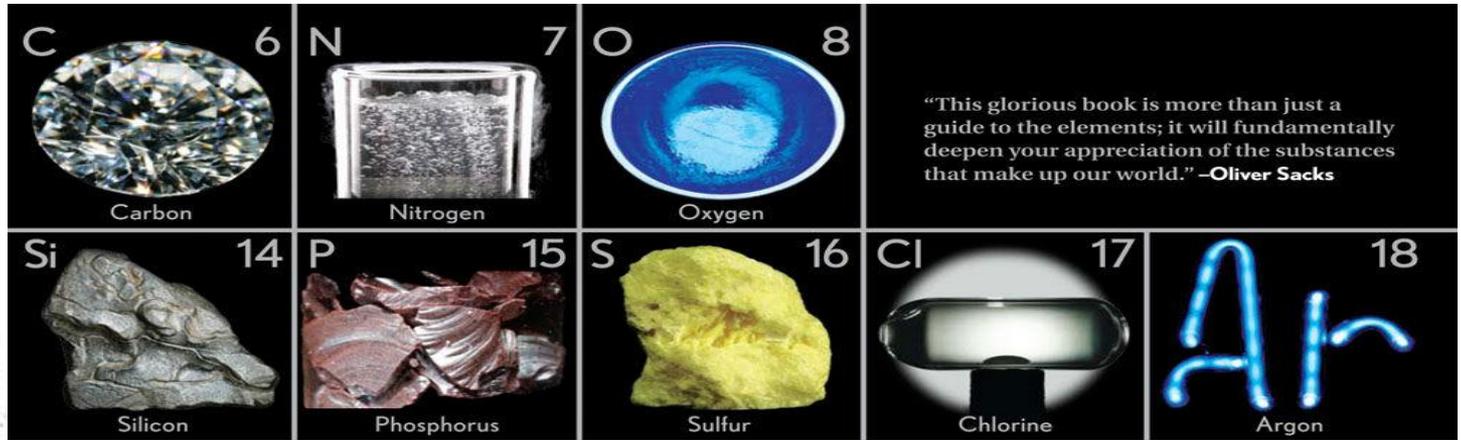
} In "Nucleus"



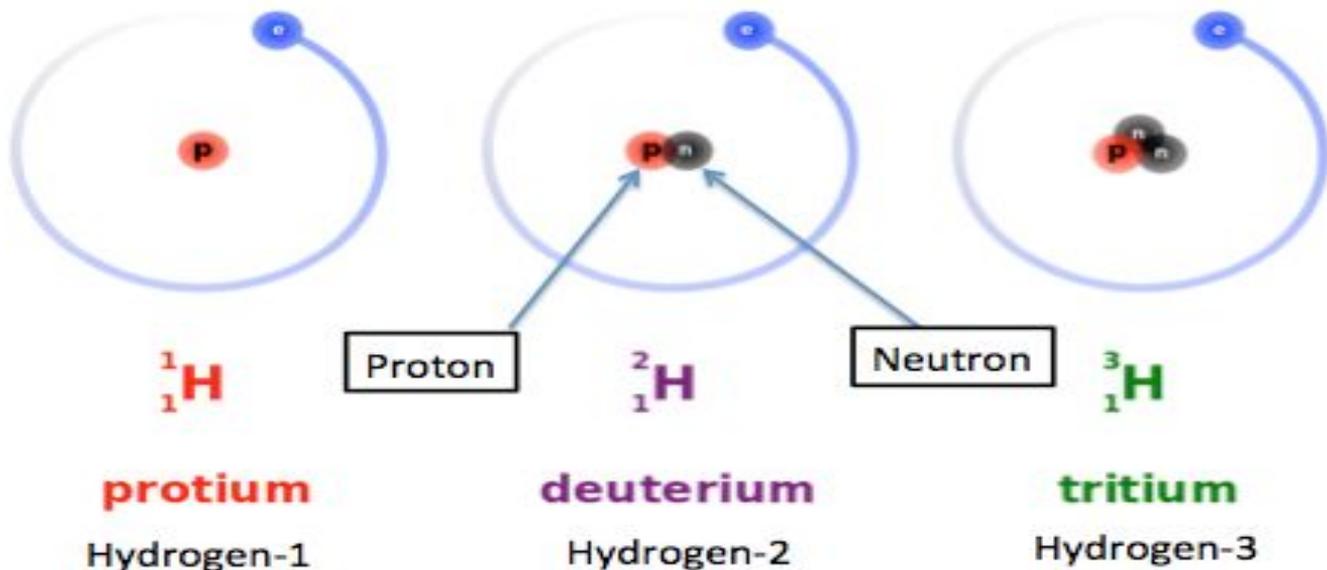
What are elements?

Number of protons determines which element an atom is. Different elements have fundamentally different properties.

i.e. an atom of gold behaves very differently than an atom of hydrogen



Example: these are all hydrogen atoms, because they have 1 proton





If they have different numbers of:

- Protons--they are different **elements**
- Electrons--they are different **ions** of the same element
- Neutrons--they are different **isotopes** of the same element

Discuss with Table Partner

You have 2 atoms with the following numbers of subatomic particles. How would you describe their relationship?

Protons	Electrons	Neutrons
4	4	4
4	5	4

Hydrogen



1 proton
1 electron
0 neutrons

Helium



2 protons
2 electrons
2 neutrons

Carbon



6 protons
6 electrons
6 neutrons

Adding a proton makes a new kind of atom!
Adding a neutron makes an isotope of that atom,
a heavier version of that atom!

Adding or subtracting an electron makes an ion, an atom
that has a positive or negative charge!